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# Mediated Crafts: Digital Practices around Creative Handwork

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Figure 1. This Spyn prototype was built for the Android 1.5 OS mobile phone environment. Image courtesy of James Jordan.

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## Abstract

In this submission, I discuss my design research and fieldwork investigating *mediated crafts*—digital practices around creative handwork. Specifically, I study how creating and sharing digital information around knitting or crochet activity affects the social and material relationships enacted through craft. Here I review my qualitative research on the role of digital resources in creative handwork and the iterative design of Spyn, mobile phone software that associates digital records of the creative process—captured through audio/visual media, text, and geographic data—with physical locations on handmade fabric.

## ACM Classification Keywords

H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

## Keywords

Craft, Creativity, Design process, Handcraft, Handwork.

## General Terms

Design, Human Factors.

## Introduction

From furniture production to architecture, design activities increasingly involve digital tools. To some extent the rise of computation suggests an accelerating transition from physical to digital practices. However,



Figure 2. (a) The current system (above) uses computer vision to correlate recorded media with locations on fabric. (b) A participant (below) “pins” her Spyn project.

the rising popularity of craft pushes back at this prediction. Craft establishes the central role of physical material in combination with digital practices, in both craft activity and social engagements more generally. Online tools such as how-to websites, blogs, and discussion forums enable people to share cultural knowledge, discover craft resources, and inspire creative modifications. While HCI research has looked at the creative appropriation of existing digital tools (e.g., [7]), little work has explored the porous boundaries between tangible and digital activities around craft and creative redesign.

My dissertation work aims to fill this gap by studying the ways digital practices intersect with physical creative handwork. How do people integrate digital and tangible materials in creative work? How do people negotiate control using computer-mediated tools? How people respond to the ways digital artifacts do or do not record creative interactions? Focusing on knitting and crochet work, two traditional leisure handcrafts that are growing in popularity, I will address these questions in two stages. First, I will extend the design of Spyn—a tool that associates digital information with locations on handmade fabric. Second, I will conduct an iterative design intervention using Spyn in order to examine the role of digital content captured during craftwork. By introducing Spyn to an existing online craft community, I seek to more acutely understand how digital tools can be designed to support the continuing development of everyday creative practice.

### Background

Blogs, how-to resources, and diverse distribution channels impact the ways creativity is performed by individuals and the communities that they help sustain.

In order to extend these practices, HCI researchers have designed tools for offline sites of craft activity that merge craft with electronics to promote educational engagement (e.g., [1]). Others view HCI itself as a craft—allowing us to suspend “the distinction between tools and materials” [8]. My work focuses on how both digital and tangible craft resources influence the value and meaning people attribute to specific objects in the context of social exchange. By studying people’s interactions with digital technologies, I seek to understand the role those technologies can play in enacting craft values, such as personal expression and care. To study these qualities, my dissertation work builds on two ongoing efforts: 1) qualitative studies of contemporary creative handwork, and 2) a design study of Spyn.

### *Studying Creative Handwork*

The process of creating a handmade object requires a uniquely human investment—one of human pace, one of physical effort, and one of care. Despite its seemingly non-technological orientation, handcraft increasingly integrates skilled, creative work with new technology (see [2]). In four separate studies, I investigated the time-honored craft of knitting [4][5][6] and the emerging practice of “IKEA hacking” [3]—the modification of products from the Swedish furniture company IKEA wherein people share their results online. I found that while denying information technology direct access to craftwork, knitters and IKEA hackers used a variety of digital tools to support their planning (organizing meetings, yarn swaps), production (finding inspirations, instructions), and social interactions (chatting, organizing “meetups”, displaying and distributing products).



Figure 3. (left to right, top to bottom) (a) Spyn home screen, (b) pinning garment, (c) creating a new Spyn entry in “Create Memory” screen, and (d) viewing Spyn entry.

### Spyn

Spyn is a design study that explores how technology can enrich the creative and social relationships people have with handcrafted artifacts and the people for whom they are made. Over the past two years, Spyn has developed from a design sketch, into a series of prototypes [3], and now a mobile phone application (see Fig. 1) [6]. The phone application uses computer vision techniques to transparently correlate locations on handmade fabric with events—audio/visual media, text, and geographic data—recorded while crafting.

### ITERATIVE DESIGN PROCESS

I began my design process by conducting fieldwork in four knitting circles in the Bay Area. Based on the data I collected through observation and semi-structured interviews with recreational knitters, I distilled five design principles for Spyn. 1) *Portability*: knitters craft in diverse locations; technology should capture the places and times of craft activity. 2) *Process and Invested Time*: knitters enjoyed the process of handwork as much as its product; technology should keep track of progress and make the process visible. 3) *Occasions and Opportunities*: knitters were motivated by a variety of social and cultural phenomena; technology should celebrate those motivations by supporting digital media capture. 4) *Annotation*: knitters annotated their projects on note cards, notebooks and websites; technology should support note taking. 5) *Tactility*: knitters enjoyed the rhythm created by hands, needles and soft materials; technology should remain lightweight, and preserve the existing aesthetic of knitters’ tools and materials.

### CURRENT SYSTEM

The Spyn software was written in Java 1.5.0 for the Android 1.5 OS. To attach information to fabric, a person (see Fig. 3): 1) photographs the fabric, 2) touches the location on the photographed image of the fabric in which the person would like to attach information, and 3) creates a Spyn entry. In step (1) the Spyn software reads the knit and crochet patterns on fabric in order to correlate locations on the fabric with digital media recorded while crafting. I designed the vision algorithm to count rows on the sockinette stitch (a basic and well known knitting stitch) at approximately 6 inches from the fabric (see Fig 2b). If a garment is too large to fit into the viewfinder, they take several photos in step (1) and the software combines these images. The creator has the choice of skipping step (1) in order to “pin” an existing photo of the fabric. Creators can share the digital content on the Android phone (Fig. 2) or a website (Fig. 4) after the project is complete.

After designing the Spyn system for the mobile phone environment, I observed 12 leisure needle-crafters use Spyn to create one or more handmade garments over two to four weeks and then give those garments to friends, partners and family members. I found that the creation and transfer of digitally augmented items followed the familiar rhythms of craft labor, as investments of time and effort sparked self-awareness, creative expression, and demonstrations of care. I also found that the digital became a means for unraveling the value of the gift—craft recipients used digital information associated with the physical objects to interpret the story behind the objects and their creator. By associating digital information to physical form, creators gave recipients access to their subjective

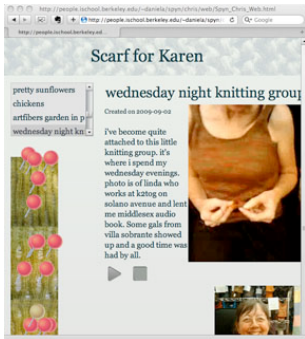


Figure 4. Web-based Spyn project for participant's scarf

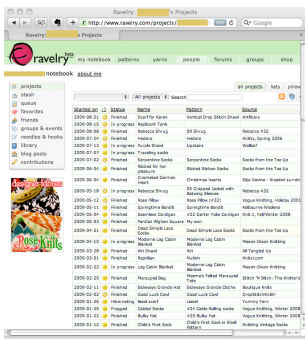


Figure 5. Projects page on Ravelry.com.

experiences while crafting, often heightening the recipient's appreciation of the gift and the creator's craft process.

### Proposed Design and Fieldwork

My proposed dissertation work builds on my previous studies [4][5][6] that suggest digital tools can indeed enhance the *creative* and *communicative* processes involved in physical handwork. My next step is to more deeply explore the role of digital augmentation in real-time sharing environments. Toward this end, I plan to investigate the following questions of needle-craft activity: (1) What, if any, qualities of physical craft practice and craft products translate into the creation and exchange of digital media? What is involved in this translation for the creator, craft recipient and craft community member? (2) What, if any, qualities of digital practices and digital media translate into the creation and exchange of physical crafts? What is involved in this translation for the creator, craft recipient and craft community member? (3) What new practices are achieved through the interaction of tangible and digital material?

In order to begin answering these questions, I plan to first extend the design of Spyn by automating the website-production process. As they use Spyn to "pin" their garments, crafters will be able to post Spyn entries either on a central website or on Ravelry.com (see Fig. 5)—a social networking site created by and for needle-crafters. With over a half million registered users, Ravelry has emerged as an important digital resource for sharing and managing craft projects. I then plan to release the Spyn software for free public use on the Android Marketplace, an online distribution

channel for phone applications. Once the Spyn software is posted, I intend to observe how selected users incorporate the Spyn software into their everyday creative activities.

### Conclusions

In summary, my dissertation work aims to understand the role of digital practices around creative handwork by using Spyn to intervene on the activities of everyday knitters and crochet practitioners. By studying the ways people engage with Spyn, I will contribute to HCI research a deeper understanding of *mediated crafts*—intersection of digital practices with physical craft practices—and the communities around them.

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